

K.S

<b>Notice of Allowability</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/684,950	HORTON, MICHAEL A.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Douglas N Washburn	2863	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to terminal disclaimer filed 7 September 2004.
2. ☒ The allowed claim(s) is/are 1-29.
3. ☒ The drawings filed on 13 October 2003 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All    b) ☐ Some\*    c) ☐ None    of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  6. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

- |   |  |
|---|--|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892)  | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)            |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                | 6. <input type="checkbox"/> Interview Summary (PTO-413),<br>Paper No./Mail Date _____. |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),<br>Paper No./Mail Date _____ | 7. <input type="checkbox"/> Examiner's Amendment/Comment                               |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br>of Biological Material          | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance   |
|   | 9. <input type="checkbox"/> Other _____.   |

### **DETAILED ACTION**

1 The terminal disclaimer filed on 7 September 2004 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of US Patents 6,421,622 and 6,647,352 have been reviewed and is accepted. The terminal disclaimer has been recorded.

### ***Response to Amendment***

2 Applicant terminal disclaimer has overcome the judicially created doctrine of obviousness-type double patenting of claims 1-3, 6-8 and 10-29 and the rejection is withdrawn.

### ***Allowable Subject Matter***

3 The following is an examiner's statement of reasons for allowance:

Claim 1 recites, in part, "determining a level fame acceleration value of the object based upon the direction cosine matrix and an acceleration of the object". This feature in combination with the remaining claimed structure avoids the prior art of record.

Claims 2, 3, 6-8 and 14 depend from claim 1.

Claim 4 recites, in part, "performing temperature correction to angular rate and acceleration data to temperature compensate the data which updates the cosine matrix, and to temperature compensate the corrective rate signal to correct the updated cosine matrix.". This feature in combination with the remaining claimed structure avoids the prior art of record.

Claim 5 recites, in part, “performing frequency compensation of angular rate data to expand the operational bandwidth of the angular rate data to provide updates to the directional cosine matrix under dynamic conditions which the angular rate data alone would not track, or which compress the bandwidth of the angular rate and acceleration data to reduce noise and to reduce vibration sensitivity in the calculation of the direction cosine matrix.”. This feature in combination with the remaining claimed structure avoids the prior art of record.

Claim 9 recites, in part, “wherein the calculation of direction cosine matrix is dependent on the angular rates measured by the gyros, and on the corrective rate signal determined from an accelerometer gravity reference algorithm, solved through integration, to normalize the direction cosine matrix”. This feature in combination with the remaining claimed structure avoids the prior art of record.

Claim 10 recites, in part, “determining a level fame acceleration value of the object based upon the direction cosine matrix and an acceleration of the object”. This feature in combination with the remaining claimed structure avoids the prior art of record.

Claims 11-13 depend from claim 10.

Claim 15 recites, in part, “computing a direction cosine matrix representation of attitude of the accelerating object based upon the angular rate and a corrective angular rate of the accelerating object”. This feature in combination with the remaining claimed structure avoids the prior art of record.

Claim 16 depends from claim 15.

Claim 17 recites, in part, “computing a direction cosine matrix representation of attitude of the accelerating object based upon the angular rate and a corrective angular

rate of the accelerating object". This feature in combination with the remaining claimed structure avoids the prior art of record.

Claim 18 recites, in part, "determining a level fame acceleration value of the object based upon the direction cosine matrix and an acceleration of the object". This feature in combination with the remaining claimed structure avoids the prior art of record.

Claims 19-29 depend from claim 18.

It is these limitations, which are not found, taught or suggested in the prior art of record, and are recited in the claimed combination that makes these claims allowable over the prior art.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Conclusion***

4 Any inquiry concerning this communication or earlier communications from the examiner should be directed to Douglas N Washburn whose telephone number is (571) 272-2284. The examiner can normally be reached on Monday through Thursday 6:30 AM - 4:30 PM.

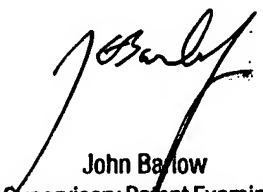
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John E Barlow can be reached on (571) 272-2269. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2863

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DNW



John Barlow  
Supervisory Patent Examiner  
Technology Center 2800